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Office of the Assistant Secretary for Preparedness and Response (ASPR)

Pandemic Influenza Preparedness Planning

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The Burden of Influenza

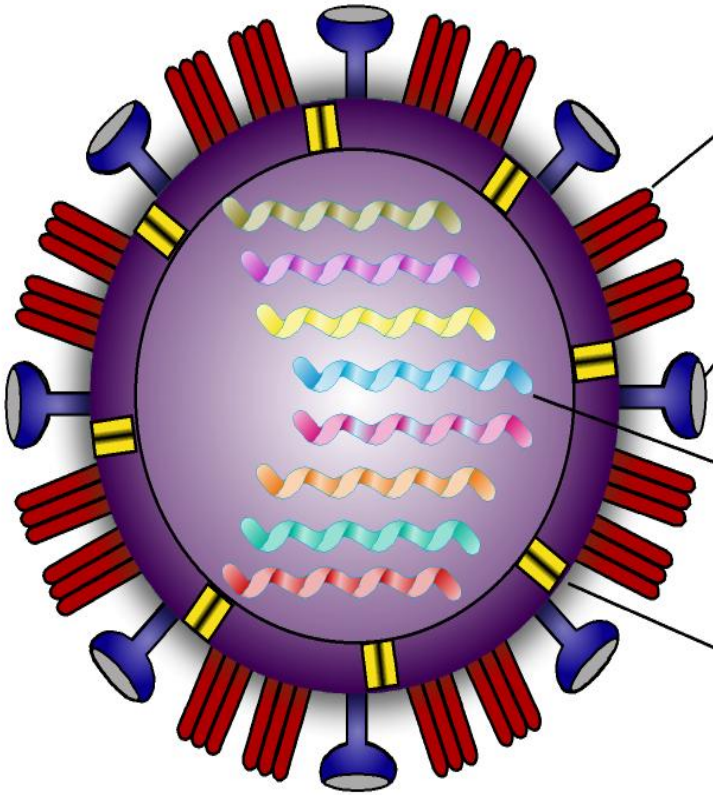
Seasonal Influenza

- Globally: 250,000 to 500,000 deaths each year
- In the United States each year:
  - 36,000 deaths
  - >200,000 hospitalizations
  - $37.5 billion in economic costs from influenza and pneumonia

Pandemic Influenza

- An ever-present threat

Influenza A Virus



Hemagglutinin (H) - 16 subtypes
(attachment, penetration)

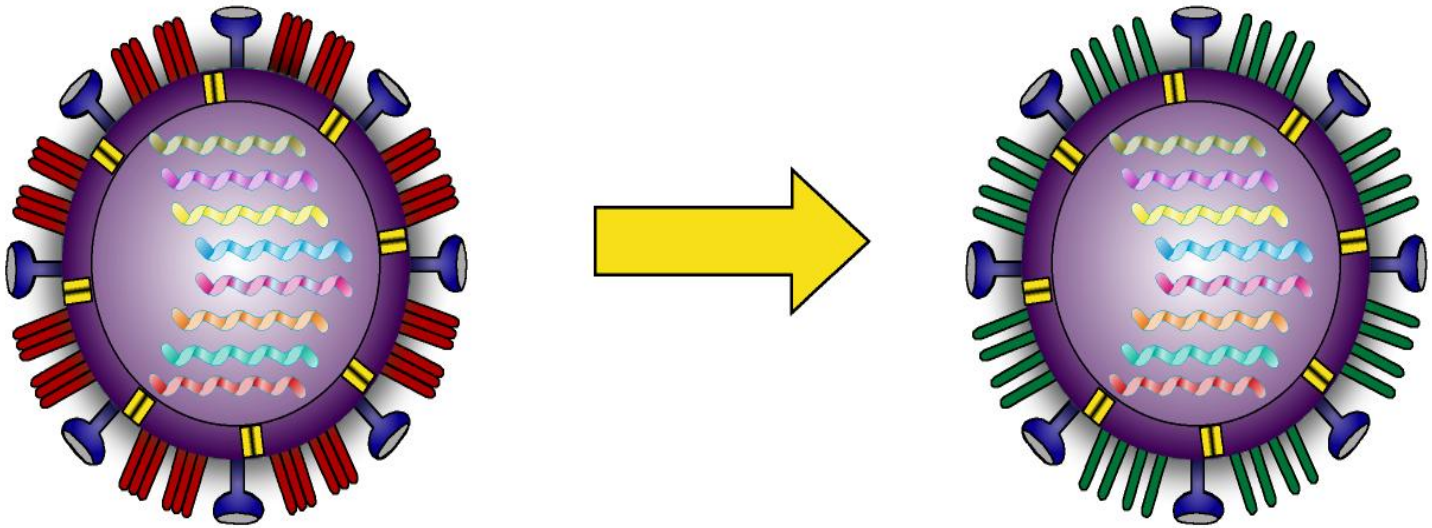
Neuraminidase (N) - 9 subtypes
(release)

8 viral genes
(assembly, replication, etc.)

M2 Protein
(penetration)

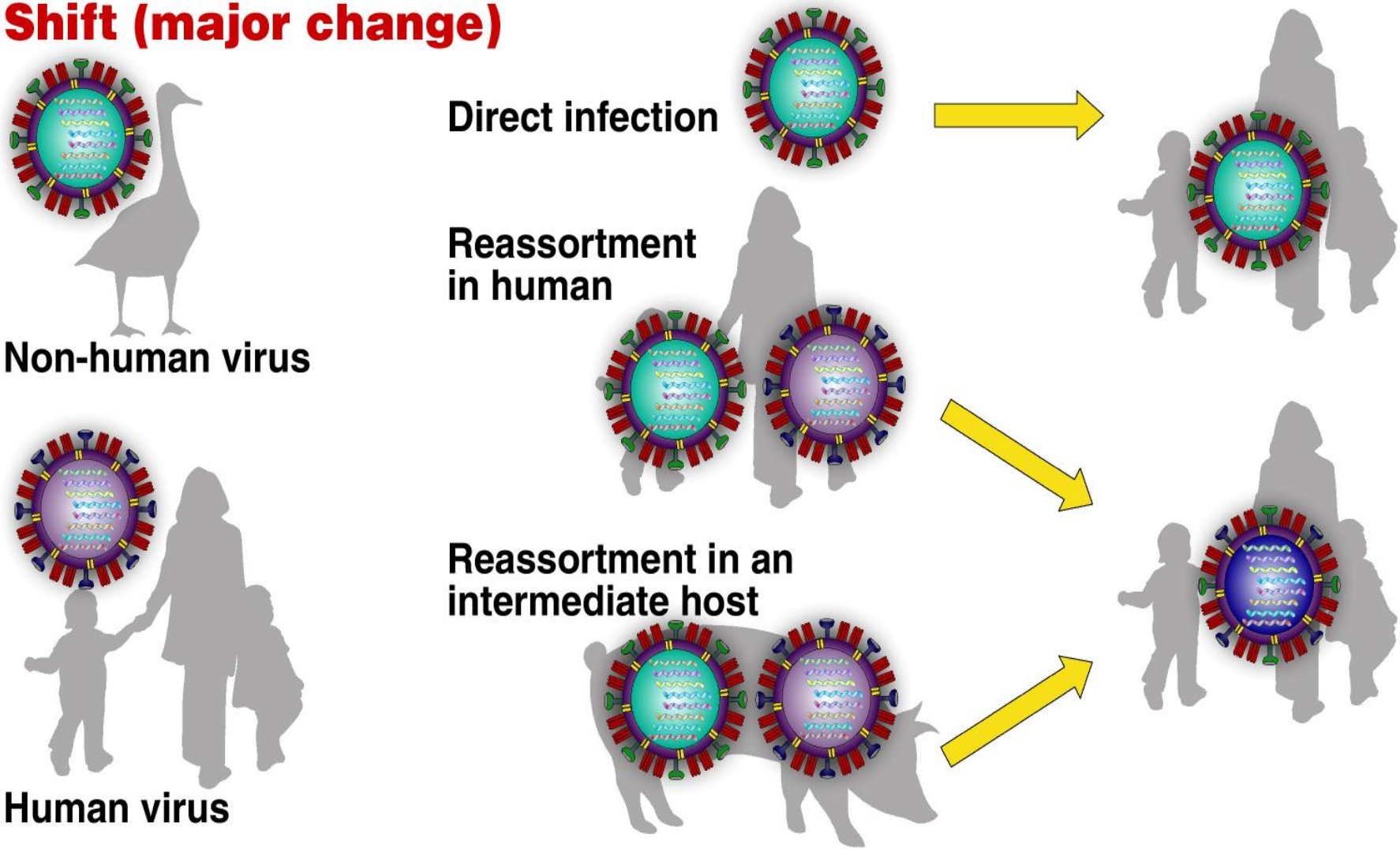
Emergence of New Human Influenza Subtypes

Drift (minor mutations)



Emergence of New Human Influenza Subtypes (continued)

Shift (major change)



Definition of a Pandemic Influenza A Virus

- Isolation from humans of an influenza A virus with a novel hemagglutinin or a novel hemagglutinin and neuraminidase gene.
- Susceptibility (lack of antibody) to this novel virus, in a large proportion of the population.
- Demonstrated ability of the virus to cause disease and spread from person-to-person.

Source: Subbarao/Murphy

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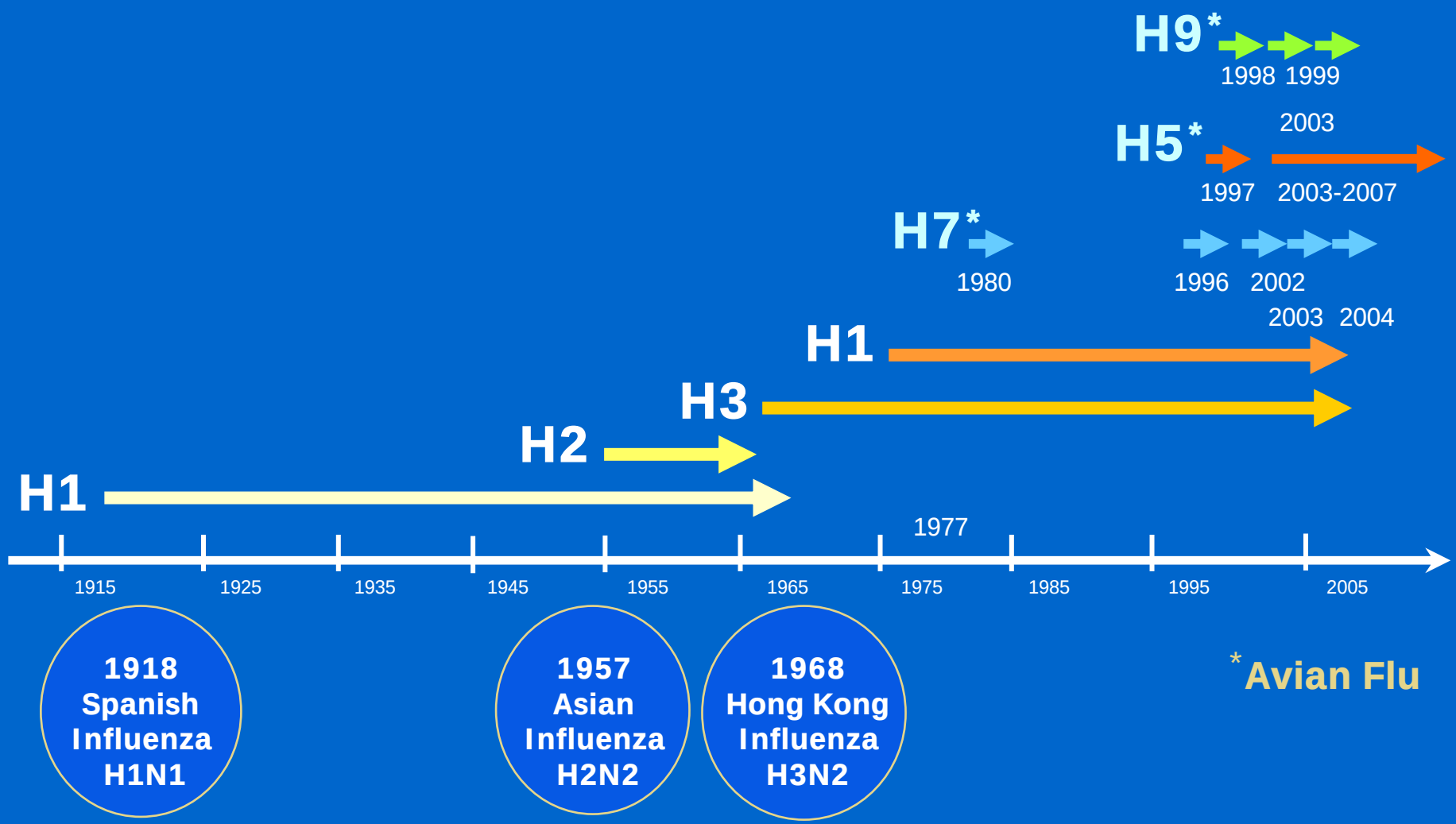
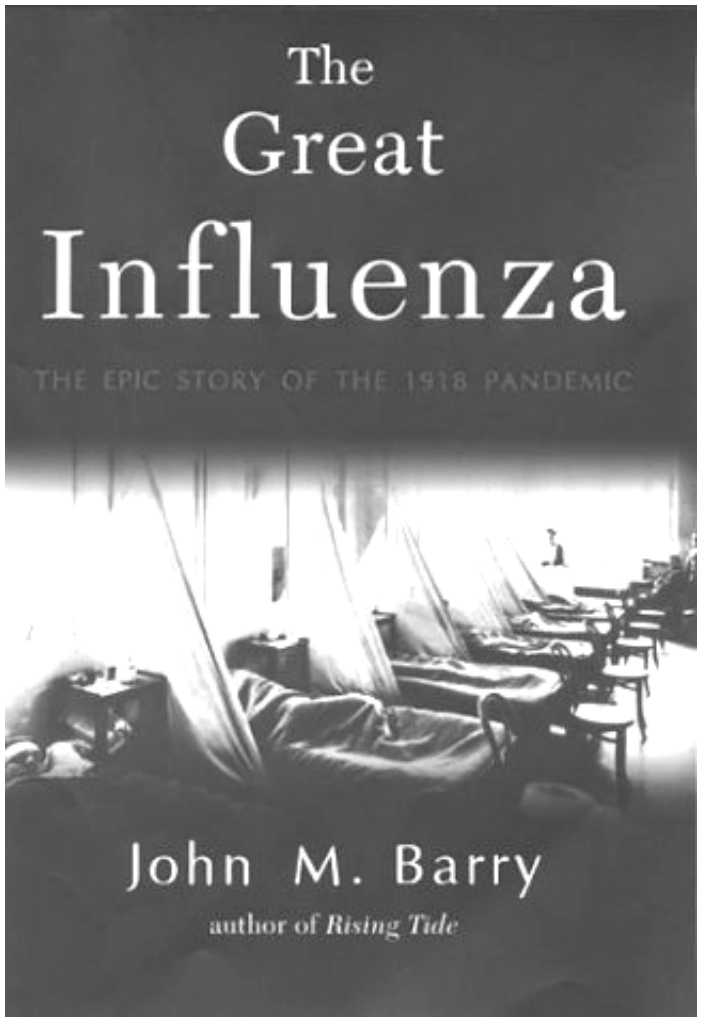
Pandemics Do Happen!



Pandemic of 1918



- 25-30% of world's population (~500 million people) fell ill
- >40 million deaths worldwide; ~60% in people ages 20-45
- 500,000 deaths in the United States; 196,000 in October, 1918 alone

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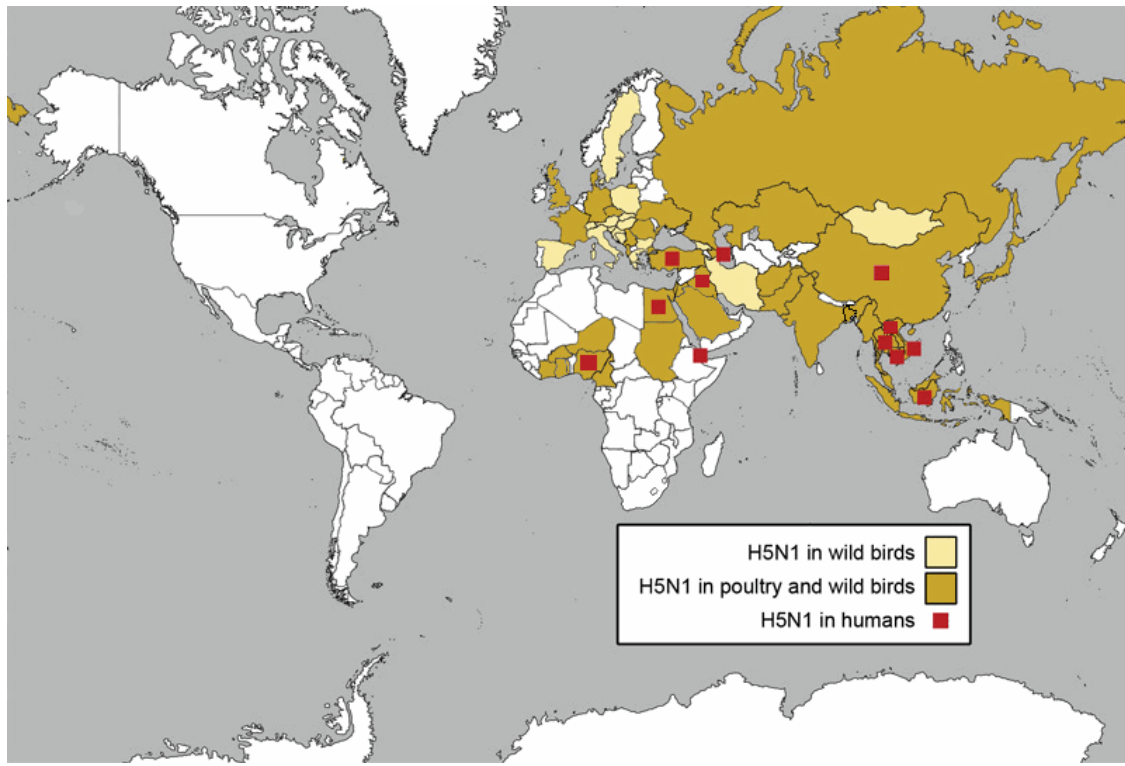
Situation Update: H5N1 Avian Influenza

- Outbreaks in wild birds and domestic poultry
- Infection of some mammalian species
- Continued viral evolution
- Sporadic human cases – as of 10/12/07
  - 331 human cases
  - 202 deaths (61%)
  - Most cases in children and young adults
- Rare transmission between family members



To become pandemic: Sustained and rapid person-to-person transmission

Our Health Protection Preparedness System

A NETWORK of Shared Responsibility!

- Local - tribal - state - federal
- Domestic – international
- Public – private
- Multi-sector
- Non-partisan
- Animal – human
- Health protection – homeland security – economic protection

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Pandemic Influenza Planning Assumptions: Health Care

- 30% clinical attack rate
- 50% of ill persons will seek medical care
- Hospitalization and deaths will depend on the virulence of the virus

	Moderate (1957-like)	Severe (1918-like)
Illness	**90 million (30%)**	**90 million (30%)**
Outpatient medical care	**45 million (50%)**	**45 million (50%)**
Hospitalization	**865,000**	**9, 900,000**
ICU care	**128,750**	**1,485,000**
Mechanical ventilation	**64,875**	**745,500**
Deaths	**209,000**	**1,903,000**

Extrapolation does not include potential impacts of interventions

Source: Meltzer, CDC, unpublished data

Influenza Virus Transmission

- Respiratory (common)
  - Large droplets
  - Small particle aerosols
  - Close contact - within 6 ft - required for infection
- Contact (less common)
  - Hand contact with secretions & transfer to nose or mouth
  - Limited virus survival time on non-porous surfaces (several days) and hands

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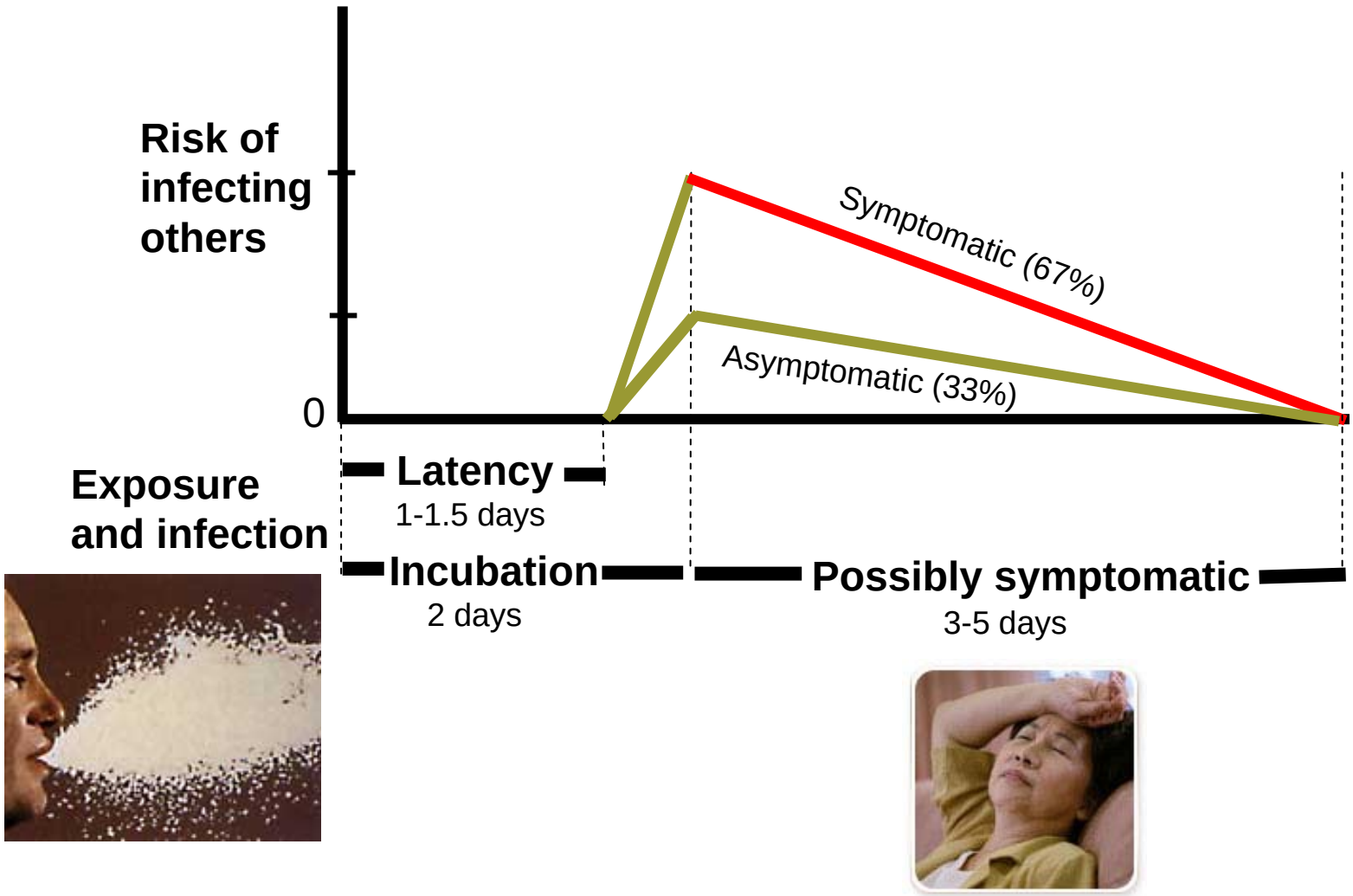
Natural History of Seasonal Influenza Infection



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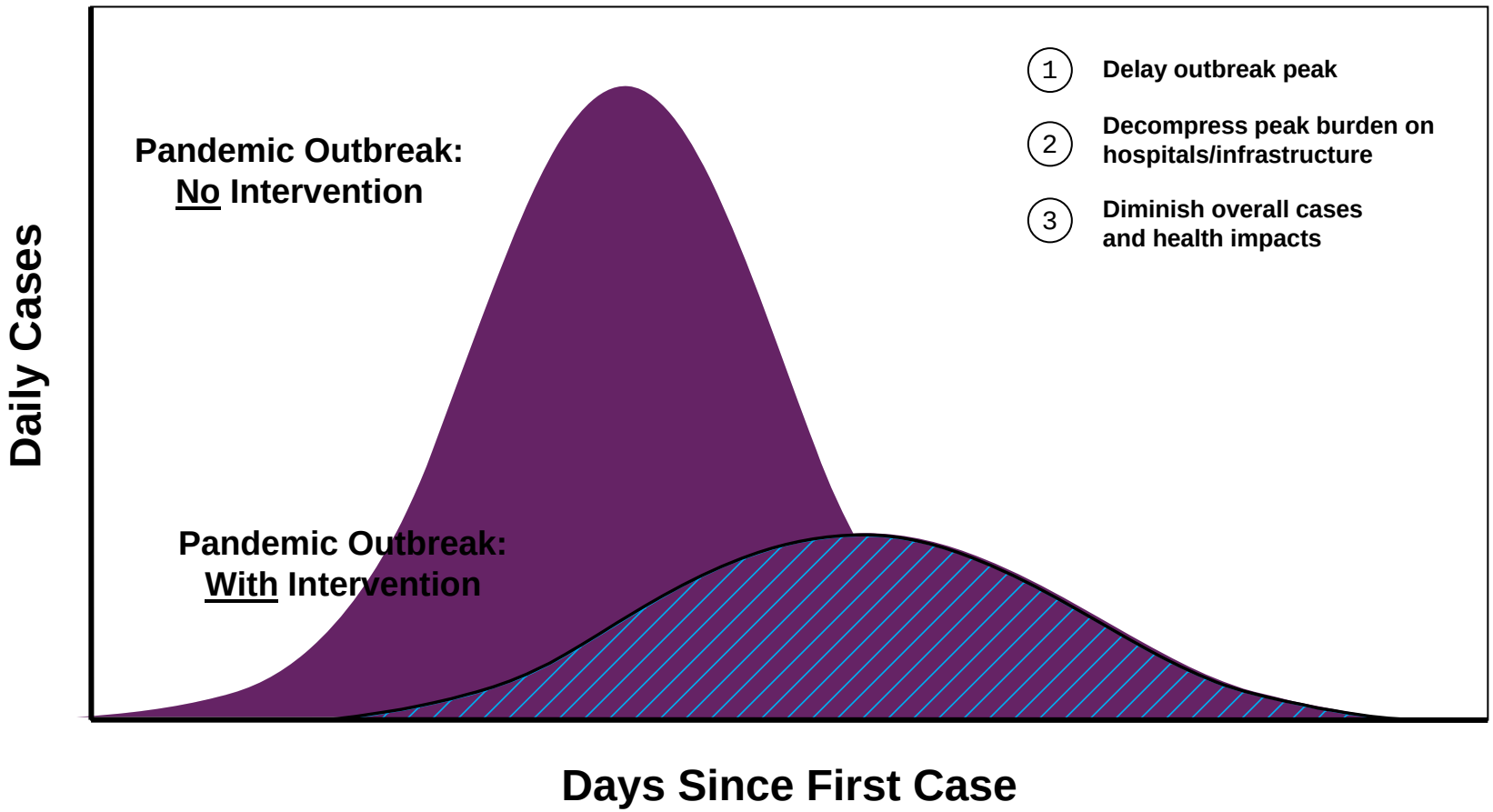
Goals of Community Mitigation



Community Mitigation

- Components
  - Isolate cases & voluntary quarantine of case households
  - Close schools & keep children home
  - Cancel public gatherings
  - Social distancing in communities and at workplaces
- Implementation depends on pandemic severity
  - Pandemic severity index developed to guide strategies

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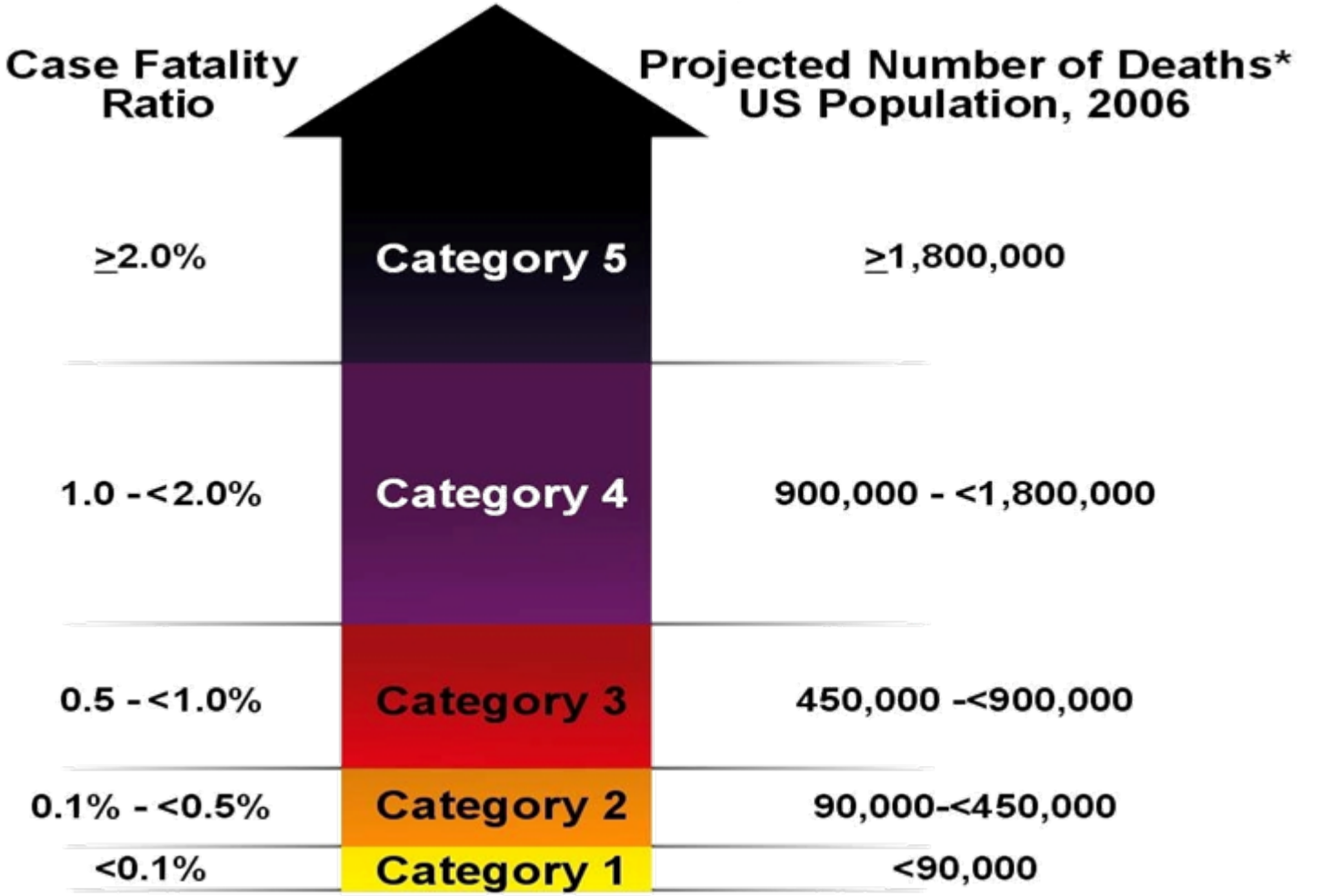
Pandemic Severity Index



* Assumes 30% Illness Rate

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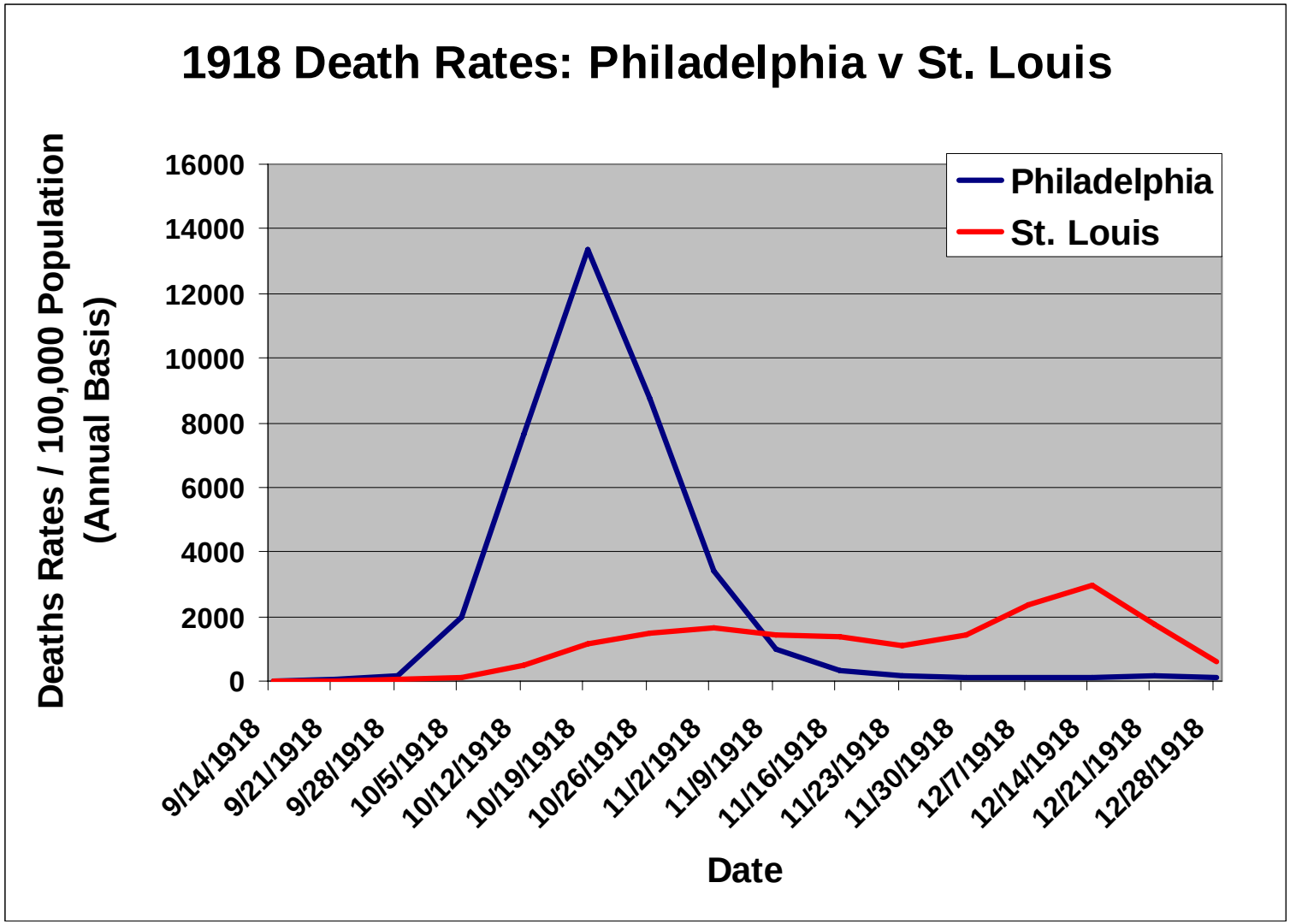
Pandemic Influenza Mortality: A Tale of Two Cities, 1918



Application of Social Distancing Strategies to Workplaces

- Goal: reduce contact between infected & well persons
- Strategies
  - Telework
  - Flexible shifts
  - Educate ill staff to stay home (screen staff reporting to work)
  - Cancel meetings (teleconference)
  - Modify the work environment

Pandemic Infection Control Strategies

- Objective – reduce virus contact with mouth, nose, eyes
- Strategies
  - Work practice and engineering controls – plastic barrier to prevent exposure to coughs and sneezes
  - Respiratory and hand hygiene
  - Use face masks or N95 respirators and other PPE in appropriate settings
    - (see guidance at www.osha.gov, www.cdc.gov)

Types of Vaccines for a Pandemic

- Pre-pandemic vaccine
  - Made before a pandemic against potential pandemic viruses and held in national stockpile
  - Match with pandemic virus & effectiveness unknown
- Pandemic vaccine
  - Made after the pandemic begins specific to the pandemic virus
  - Vaccine development process takes at least 20 wks
  - Over $1 billion allocated to increase pandemic vaccine manufacturing and supply

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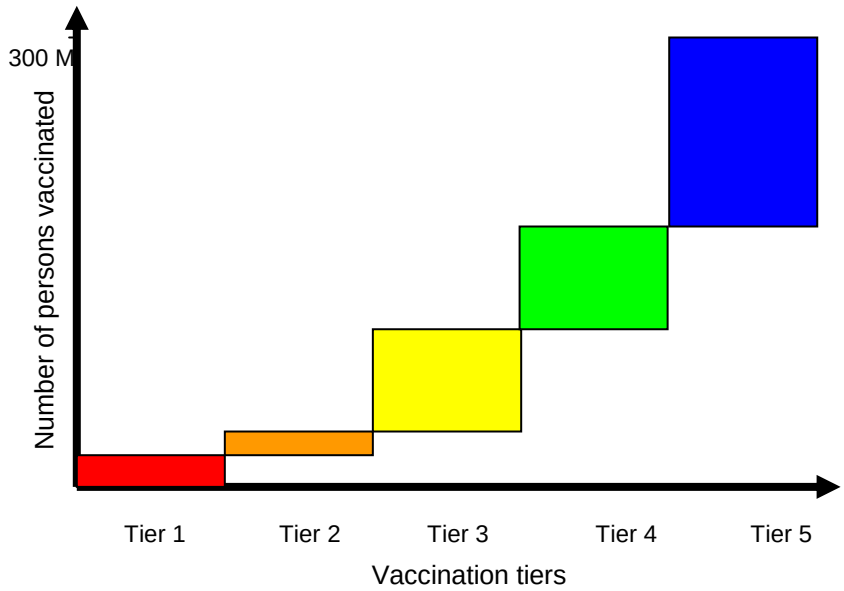
Pandemic Influenza Vaccine Prioritization

- Pandemic vaccine will become available incrementally as it is produced
- Priority groups for vaccine are defined in “tiers”
- Government workers are in different tiers based on their job responsibilities
  - Operational or critical regulatory
  - Continuity-of-operations
  - Other



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National Pandemic Influenza Antiviral Drug Program

- Target is 81 M courses between HHS and States
  - HHS stockpile has 37.4 M courses on hand / on order
  - States have purchased 12 M courses
- FY08 budget requests funds for remaining 14 M HHS courses

Treatment Courses	Stockpile Type	Purpose
6 M	HHS	"Quenching"
44 M	HHS	Treatment
31 M	State	Treatment
81 M	HHS & State Combined	

National Pandemic Preparedness Plan (Nov. 2005) and *HHS Pandemic Preparedness Plan* (Nov. 2005): www.pandemicflu.gov

Pandemic Influenza Information

- For More Information on how to prepare:

www.pandemicflu.gov